THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 10

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte SCOTT H. PRENGLE and ROBERT H. EKLUND

_____

Appeal No. 1997-3967
Application No. 08/482,058[1]

_____

ON BRIEF

_____

Before THOMAS, HAIRSTON and KRASS, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

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[1] Application for patent filed June 7, 1995. According to appellants, this application is a continuation of Application No. 08/165,553 filed December 10, 1993, now U.S. Patent No. 5,910,676 issued June 8, 1999; which is a continuation of Application No. 07/895,535 filed June 8, 1992, now abandoned; which is a division of Application No. 07/785,174 filed October 29, 1991; now U.S. Patent No. 5,171,702 issued December 15, 1992; which is a continuation of Application No. 07/383,960 filed July 21, 1989, now abandoned.

This is a decision on appeal from the final rejection of claims 14, 16, 19 through 21, 23 and 26 through 28. The final rejection of claims 17, 18, 24 and 25 under 35 U.S.C. § 103 has been withdrawn by the examiner in the answer and is not before us on appeal.

The invention is directed to an integrated circuit structure having both bipolar and field effect transistors where the bipolar transistor is of the single polysilicon type and has a thick dielectric between the base and the emitter polysilicon electrode plus a sidewall dielectric on the emitter electrode.

Representative independent claim 14 is reproduced as follows:

14. An integrated circuit structure at a semiconductor surface of a body, comprising:

a bipolar transistor comprising:

a collector region of a first conductivity type;

an intrinsic base region of a second conductivity type disposed at said surface and within said collector region;

an emitter region of said first conductivity type disposed at said surface and within said intrinsic base region;

a base dielectric layer, overlying said intrinsic base region and having a contact hole therethrough to said emitter region; and

an emitter electrode, disposed over said dielectric layer and in contact with said emitter region through said contact hole;

an insulated-gate field effect transistor, comprising:

a well region of said first conductivity type and having the same impurity concentration as said collector region;

a gate dielectric comprising thermal silicon dioxide of a thickness substantially thinner than said base dielectric layer of said bipolar transistor, disposed over a portion of said well region;

a gate electrode disposed over said well region and insulated therefrom by said gate dielectric; and

source/drain regions of said second conductivity type disposed at said surface adjacent said gate electrode and within said well region;

an isolation structure disposed at said surface between said bipolar transistor and said insulated-gate field effect transistor; and

sidewall dielectric filaments, disposed adjacent the outer edges of said emitter electrode and said base dielectric layer outside of said contact hole, and adjacent the sides of said gate electrode of said insulated-gate field effect transistor.

The examiner relies on the following references:

Schaber	4,752,589	Jun. 21, 1988
Japanese Kokai Application[2] (Denda)	62-98663	May 8, 1987

Claims 25 through 27 stand rejected under 35 U.S.C. § 112, second paragraph, as being vague and indefinite. Claims 14, 16, 19 through 21, 23 and 26 through 28 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner offers Denda with regard to claims 14, 16, 19, 21, 23, 26 and 28, adding Schaber with regard to claims 20 and 27.

Reference is made to the brief and answer for the respective positions of appellants and the examiner.

OPINION

Turning first to the rejection of claims 25 through 27 under 35 U.S.C. § 112, second paragraph, it is the examiner's view that the claims are indefinite since claim 25 depends

[2] Our understanding of Denda is based on an English translation thereof prepared for the United States Patent and Trademark Office.

from a canceled claim, 22, and it is unclear whether "contact" on line 2 of claim 27 refers to "contact hole."

For their part, at page 4 of the brief, appellants acquiesce in the rejection under 35 U.S.C. § 112, second paragraph. Accordingly, we will, pro forma, sustain the rejection of claims 25 through 27 under 35 U.S.C. § 112, second paragraph.

We now turn to the rejections based on 35 U.S.C. § 103.

With regard to the rejection of claims 14, 16, 19, 21, 23, 26 and 28 over Denda, we will sustain this rejection for the reasons set forth by the examiner at page 4, and then again, at pages 5-6 in the response to arguments section. We also elaborate on the examiner's reasoning as follows.

Appellants contend that Denda does not disclose nor suggest the claimed "filaments." They suggest that film 16 and dielectric 9 can form no "filaments" because film 16 of Denda is not adjacent the outer edges of the emitter electrode and the base dielectric layer. Appellants also contend that because film 16 of Denda is continuous, it is not in the form of a filament. We disagree. The claims of interest do not specify the thickness of the claimed "filaments" nor do they

specify any details about the filaments. As broadly recited in the instant claims, we agree with the examiner's analysis that a "portion" of the film 16 adjacent the emitter electrode and a "portion" of oxide 9 adjacent the electrode 17 on the emitter side may be considered, as broadly claimed, a "sidewall dielectric filament." Whether film 16 is "continuous," as alleged by appellants, or not, does not appear relevant to the broadly claimed "sidewall dielectric filaments" since the cutaway view of Denda's Figure 6 clearly shows portions of film 16 and dielectric 9 situated, as reasoned by the examiner, disposed adjacent the outer edges of the emitter electrode and the base dielectric layer outside of the contact hole, and adjacent the sides of the gate electrode of the IGFET. We note further that the claims don't require the filaments to be specifically horizontally or vertically "adjacent" the recited elements; only that they be "adjacent," which Denda's Figure 6 clearly shows, as explained by the examiner.

Accordingly, since the examiner has set forth, in our view, a prima facie case of obviousness, regarding claims 14, 16, 19, 21, 23, 26 and 28, which has not been overcome by

evidence or arguments by appellants, we will sustain the rejection of these claims under 35 U.S.C. § 103 over Denda.

We reach a different result with regard to the rejection of claims 20 and 27 under 35 U.S.C. § 103 over Denda in view of Schaber.

The claims here call for the emitter electrode making contact to said emitter region at a location between the inner sidewall dielectric filaments “in said contact hole.” The examiner relies on elements 10 in Schaber to provide such a teaching and purports to combine this with Denda since both references teach a bipolar transistor and concludes that it would have been obvious to have the sidewall dielectric filaments of Schaber in Denda “because they reduce the size of the contact hole of the emitter.” We agree with appellants. Merely because the base electrode of Schaber “can” be used in the device of Denda [answer, bottom of page 6] does not lead to the conclusion that it would have been obvious to do so, within the meaning of 35 U.S.C. § 103. In our view, appellants are correct in contending that while in Schaber the insulator elements 10 are used to avoid a p-n junction, there would have been no reason to use such an insulator in the

single polysilicon bipolar device of Denda since Denda does not need this insulator "because there is no p+ conductor above the base" [brief, page 4].

We have sustained the rejection of claims 25 through 27 under 35 U.S.C. § 112, second paragraph. We have also sustained the rejection of claims 14, 16, 19, 21, 23, 26 and 28 under 35 U.S.C. § 103. We have, however, not sustained the rejection of claims 20 and 27 under 35 U.S.C. § 103. Accordingly, the examiner's decision is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JAMES D. THOMAS Administrative Patent Judge	)
KENNETH W. HAIRSTON Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
ERROL A. KRASS Administrative Patent Judge	)

bae

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